

WHAT IS CLAIMED IS:

1. A polypeptide comprising an engineered version of SEQ ID NO:1, wherein residue 206 or 233 of SEQ ID NO:1 is substituted with an amino acid selected from the group consisting of Gly, Thr, Asp, Val and Asn.
2. The polypeptide of claim 1 wherein residue 233 is substituted with Gly or Thr.
3. The polypeptide of claim 1 wherein residue 206 is substituted with Gly, Thr or Val.
4. The polypeptide of claim 1 wherein both residues 206 and 233 are substituted.
5. The polypeptide of claim 4 comprising the following substitutions at residues 206 and 233:
 - (a) residue 206 is substituted with Gly and residue 233 is substituted with Gly;
 - (b) residue 206 is substituted with Thr and residue 233 is substituted with Gly;
 - (c) residue 206 is substituted with Thr and residue 233 is substituted with Thr; or
 - (d) residue 206 is substituted with Val and residue 233 is substituted with Thr.
6. The polypeptide of claim 1 further comprising a substitution at residue 168 of SEQ ID NO:1.
7. The polypeptide of claim 6 wherein residue 168 is substituted with an amino acid selected from the group consisting of Gly, Ser, Thr, Val, Asp and Glu.
8. The polypeptide of claim 6 wherein residue 168 is substituted with Gly or Thr.
9. A cell comprising the polypeptide of claim 1.
10. The cell of claim 9 that is a bacterial cell.
11. The cell of claim 9 that is an *E. coli*.
12. The cell of claim 9 that is an *E. coli* BL21(DE3) cell.
13. The cell of claim 9 that is a eukaryotic cell.

14. A DNA molecule comprising a sequence that encodes the polypeptide of claim 1.
15. The DNA molecule of claim 14 that is an expression vector.
16. A cell comprising the DNA molecule of claim 14.
17. A method of removing the N-terminal methionine from a target protein, comprising contacting the target protein with the polypeptide of claim 1 under conditions that result in removal of the N-terminal methionine from the target protein.
18. The method of claim 17 comprising introducing a DNA that encodes the polypeptide into a cell, wherein the cell comprises a DNA that encodes the target protein.
19. The method of claim 17 comprising introducing into a cell a DNA that encodes the polypeptide and a DNA that encodes the target protein.
20. The method of claim 17 comprising introducing into a cell a DNA that encodes both the target protein and the polypeptide.
21. The method of claim 17 wherein the amino acid residue next to the N-terminal methionine in the target protein is selected from the group consisting of Gln, Asn, Leu, Ile, Met and His.
22. The method of claim 17 wherein the amino acid residue next to the N-terminal methionine in the target protein is selected from the group consisting of Phe, Tyr and Trp.
23. The method of claim 17 wherein the amino acid residue next to the N-terminal methionine in the target protein is selected from the group consisting of Asp and Glu.